

## CLAIMS

What is claimed is:

1. An  $^{17}\text{F}$  labeled organic compound, comprising an  $^{17}\text{F}$  labeled alkane having 2 or more carbon atoms.
1. 2. The  $^{17}\text{F}$  labeled organic compound according to claim 1, wherein the alkane comprises at least two fluorine atoms and at least one of the fluorine atoms is an  $^{17}\text{F}$ .
1. 3. The  $^{17}\text{F}$  labeled organic compound according to claim 2, wherein the  $^{17}\text{F}$  labeled alkane comprises 1,1,1,2-tetrafluoroethane wherein at least one of the F atoms is an  $^{17}\text{F}$ .
1. 4.  $^{17}\text{F}$  labeled fluoromethane produced by contacting  $^{17}\text{F}$  labeled  $\text{F}_2$  with methane in the presence of a metal oxide catalyst to produce the  $^{17}\text{F}$  labeled fluoromethane.
1. 5. An  $^{17}\text{F}$  labeled fluoroalkane produced by contacting  $^{17}\text{F}$  labeled  $\text{F}_2$  with an unsubstituted alkene, a haloalkene, an unsubstituted alkyne, or a haloalkyne in the presence of a metal oxide catalyst to produce the  $^{17}\text{F}$  labeled fluoroalkane.